DISPLAY MAXIMUM VALUE OF NEXT MEASUREMENT TEST #03

Description:

This procedure causes the VTM to display highest value measured during a test. Entering test 03 into the VTM causes this causes this function to be applied to the next test entered.

Typical Applications:

Measure maximum cylinder pressure.

Pre-Test Procedures:

Procedure

Run confidence test
Perform offset tests

Control Functions:

Compatible with 01, 05

Overrides 03, 04, 06

DISPLAY PEAK TO PEAK VALUE OF NEXT MEASUREMENT TEST #04

Description:

This procedure causes the VTM to display the difference between highest value and lowest value measured during a test. Entering test 04 into the VTM causes this causes this function to be applied to the next test entered.

Typical Applications:

Measure dwell variation of cam lobes

Pre-Test Procedures:

Procedure

Run confidence test
Perform offset tests

Control Functions:

Compatible with 01, 05

Overrides 03, 04, 06

SI FULL POWER SIMULATION TEST #05

Description:

This procedure allows VTM to perform tests in SI full power simulation mode. This mode allows an SI engine to operate under maximum fuel and air flow at less than maximum speed.

Pre-Test Procedures:

Procedure

Run confidence test
Warm up engine to operating temperature (if possible)
Perform offset tests
Enter VID
or
Enter number of cylinders

Typical Applications:

Test VTM interrupter circuits

Possible Error Messages:

E009 Engine not running
E014 Incorrect number of Cylinders entered

Control Functions
01, 02 ,03, 04

DISPLAY TWO MEASUREMENTS TEST #06

Description:

This procedure allows the VTM to display alternate measurements. The display will alternate between the value of the first measurement and the value of the second measurement.

Typical Applications:

Adjust by-pass valves and main pumps on motor generators and cranes.

Determine proper operation of charging system.

Pre-Test Procedures:

Procedure

Run confidence test
Perform offset tests

Possible error messages:

E028 Test just entered cannot be used with control function 06.

ERROR MESSAGES IN TK; DCA; DCA/TK MODES

An error message indicates that the VTM needs additional or corrected information before testing can continue, or that additional procedures are required.

All error messages are displayed as an E followed by three numbers (for example, E003).

Table B-1. Error Message Displays

DISPLAY	MEANING
E000	VTM has been asked for information that it does not have. For example, you have requested the vehicle/equipment ID and it has not been entered.
E001	A test number which does not exist has been entered on the TEST SELECT switches.
E002	The required transducer is not connected.
E003	Test number wrong for DCA connected. This can occur if test selected does not apply to the class of vehicle/equipment under test or if the DCA harness does not have the required transducers.
E004	No longer used.
E005	Required offset test was not performed.
E007	The VID number and number-of-cylinders information entered do not agree.
E008	VTM is not receiving required voltage signal for selected test. This messages can occur on test 14, 15, and 72 thru 79.
E009	VTM is not receiving engine speed signal. This applies only to engine power test and SI full power simulation.
E010	A wrong VID number was entered. The VTM will only accept numbers between 01 and 99. If E010 is displayed when the VID entered was between 01 and 99, it means that the VID does not agree with the identity of DC harness powering the VTM. Testing may continue.
E011	Throttle control was operated incorrectly. It was taking too long to accelerate or decelerate during power test.
E012	The SI ignition adapter, TK item 30, or CI pulse tachometer, TK item 34, is missing or is not connected to the VTM.
E013	VTM is unable to use data received.
E014	The wrong number of cylinders was entered.

Table B-1. Error Message Displays (Cont.)

DISPLAY	MEANING
E015	No longer used.
E017	VTM is not receiving ignition information.
E018	Test discontinued due to no information being detected by VTM. This will occur after several minutes of no-signal operation.
E020	No first peak information was detected by the VTM.
E021	VTM cannot calculate result. Current is over current probe's range, and VTM did not sample correct portion of data.
E022	External voltage was detected in the circuit under test while measuring resistance.
E023	VTM's internal reference supply is not working.
E024	Test is not valid for VID entered.
E027	Error in entry of compression unbalance constants.
E028	Test entered conflicts with speed transducer attached.
E032	Vehicle's cranking speed is varying too much for a compression unbalance measurement.
E033	Error in entry of power test constants.

APPENDIX B

GENERIC DCA TEST DESCRIPTIONS

TEST 18

DESCRIPTION:

This test displays a 3 digit number which corresponds to the voltage at pin L with respect to pin W. The allowable input range is -10 to +32 volts.

APPLICABLE DCAS:

10,13

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

CONTROL FUNCTIONS:

01,02,03,04,06

05- DCA 10 only

GENERIC	TYPICAL
TRANSFER FUNCTION: 1v/1.0	**TYPICAL APPLICATIONS:** Coil Primary Volts **OFFSET REQUIRED:** NO

TEST PROCEDURES:

1. Set TEST SELECT switch to 18.
2. Turn on the circuit if voltage is not already present.
3. Press and release TEST button. If .9.9.9.9 is displayed, voltage is not within test range.
4. Observe displayed value.

TEST 21

DESCRIPTION:

This test displays a 4 digit number which corresponds to a differential voltage between pins X and Y. The allowable input range is -100mv to +100mv.

APPLICABLE DCAS:

11-12

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

100mv/1000

VTM Offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset.

TYPICAL

TYPICAL APPLICATIONS:

Engine Oil Temp
Coolant Temp

TRANSDUCER:

12258933

OFFSET REQUIRED:

OPTIONAL/ Shorting switch required

OFFSET LIMITS:

-150 to 150

TEST PROCEDURES:

1. Set TEST SELECT switch to 21.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display.
   If offset value is within proper limits proceeed. If not, go to Offset Troubleshooting Procedure.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 22

DESCRIPTION:

This test displays a 4 digit number which corresponds to a differential voltage between pins AC and AD. The allowable input range is -100mv to +100mv.

APPLICABLE DCAS:

11- 12

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

100mv/1000

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset.

TYPICAL

TYPICAL APPLICATIONS:

Engine Oil Temp
Coolant Temp

TRANSDUCER:

12258933

OFFSET REQUIRED:

OPTIONAL/ Shorting switch required

OFFSET LIMITS:

-150 TO 150

TEST PROCEDURES:

1. Set TEST SELECT switch to 22.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display.
   If offset value is within proper limits, proceeed. If not go to Offset Troubleshooting Procedure.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 23

DESCRIPTION:

This test displays a 3 digit number which corresponds to a differential voltage between pins AA and AB. The allowable input range is -90mv to +90mv.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

APPLICABLE DCAS:

10

CONTROL FUNCTIONS:

01,02,03,04,06
05 - DCA 10 ONLY

GENERIC

TRANSFER FUNCTION:

90mv/100.0

VTM offset (excluding transducer) ±1

Transducer offset is expressed in displayed units and is to be added to the VTM offset.

TYPICAL

TYPICAL APPLICATIONS:

Fuel Supply Pressure

TRANSDUCER:

12258932-6

OFFSET REQUIRED:

YES

OFFSET LIMITS:

-15 to 15

TEST PROCEDURES:

1. Set TEST SELECT switch to 23.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 24

DESCRIPTION:

This test displays a 3 digit number which corresponds to a differential voltage between pins u and v. The allowable input range is -90mv to +90mv.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

E005 Required offset test was not preformed.

APPLICABLE DCAS:

1-5,7-10

CONTROL FUNCTIONS:

01,02,03,04,06
05 -DCA 10 ONLY

GENERIC

TRANSFER FUNCTION:

DCA:	
10	90mV/10.0
4,9	90mV/30.0
1-2,5-7	90mV/100
3,8	90mV/300

VTM offset (excluding transducer) ±1.

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Fuel Supply Pressure

TRANSDUCER:

10 psi 12258932-3
30 psi 12258932-5
100 psi 12258932-6
300 psi 12258932-7

OFFSET REQUIRED:

YES

OFFSET LIMITS:

DCA:			
10	-1.5		1.5
4,9	-4.5	to	4.5
1-2,5-7	-15		15
3,8	-45		45

TEST PROCEDURES:

1. Set TEST SELECT switch to 24.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display.
   If offset value is within proper limits, proceeed. If not, go to Offset Troubleshooting Procedure.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 25

DESCRIPTION:

This test displays a 3 digit number which corresponds to a differential voltage between pins AC and AD. The allowable input range is -90mv to +90mv.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

E005 Required offset test was not preformed.

APPLICABLE DCAS:

1-2,6-7

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

90mV/100

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset.

TYPICAL

TYPICAL APPLICATIONS:

Fuel Supply Pressure 100 psi

TRANSDUCER:

12258932-6

OFFSET REQUIRED:

YES

OFFSET LIMITS:

-15 to 15

TEST PROCEDURES:

1. Set TEST SELECT switch to 25.
2. Make sure no stimulus is applied to the transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display.
   If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 26

DESCRIPTION:

This test displays Pass/Fail which corresponds to a resitance between pins s and t. The allowable input range is 0 to ∞ ohms..

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

APPLICABLE DCAS:

1-10

CONTROL FUNCTIONS:

01,02,03,06
05 -DCA 10 ONLY

GENERIC

TRANSFER FUNCTION:

PASS < 2.44 VOLTS

TYPICAL

TYPICAL APPLICATIONS:

Fuel Filter Pressure Drop 100 psi

TRANSDUCER:

12258938

OFFSET REQUIRED:

NO

TEST PROCEDURES:

1. Set TEST SELECT switch to 26.
2. Turn on the circuit if voltage is not already present.
3. Press and release TEST button. If .9.9.9.9 is displayed, voltage is not within test range.
4. Observe displayed value.

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TEST 27

DESCRIPTION:

This test displays a 3 digit number which corresponds to the voltage at pin R with respect to Pin M. The allowable input range is -10v to 32v.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

APPLICABLE DCAS:

1-9,11-13

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

1v/1.0

TYPICAL

TYPICAL APPLICATIONS:

Fuel Solenoid Voltage

OFFSET REQUIRED:

NO

TEST PROCEDURES:

1. Set TEST SELECT switch to 27.
2. Turn on the circuit if voltage is not already present.
3. Press and release TEST button. If .9.9.9.9 is displayed, voltage is not within test range.
4. Observe displayed value.

TEST 28

DESCRIPTION:

This test displays a 2 digit number which corresponds to a differential voltage between pins AA and AB. The allowable input range is -50mV to 50mV.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected

E005 Required offset test not performed.

APPLICABLE DCAS:

1 - 9

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

1mV/2.77

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Air Cleaner Pressure Drop (in. H_2O)

Measure suction vacuum in air intake relative to ambient air pressure.

TRANSDUCER:

12258932-2

OFFSET REQUIRED:

YES

OFFSET LIMITS:

-9 to +9

TEST PROCEDURES:

1. Set TEST SELECT switch to 28.
2. Make sure no stimulus is applied to transducer
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 29

DESCRIPTION:

This test displays a 2 digit number which corresponds to a differential voltage between pins AC and AD. The allowable input range is -50mV to 50mV.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected

E005 Required offset test not performed.

APPLICABLE DCAS:

5

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

1mV/2.77

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Measure suction vacuum in air relative to ambient air pressure. Second air cleaner on dual intake system.

TRANSDUCER:

12258932-2

OFFSET REQUIRED:

YES

OFFSET LIMITS:

-9 to +9

TEST PROCEDURES:

1. Set TEST SELECT switch to 29.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 30

DESCRIPTION:

This test displays a 2 digit number which corresponds to a differential voltage between pins w and x. The allowable input range is -90mV to 90mV.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected

E005 Required offset test not performed.

APPLICABLE DCAS:

1,3-6,8-9

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

1mV/0.57

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Measure discharge pressure of a turbocharger in the right turbo outlet.

TRANSDUCER:

12258932-4

OFFSET REQUIRED:

YES

OFFSET LIMITS:

-7.5 to +7.5

TEST PROCEDURES:

1. Set TEST SELECT switch to 30.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 31

DESCRIPTION:

This test displays a 2 digit number which corresponds to a differential voltage between pins y and z. The allowable input range is -90mV to 90mV.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

E005 Required offset test not performed.

APPLICABLE DCAS:

5,10

CONTROL FUNCTIONS:

01,02,03,04,06
05-DCA 10 ONLY

GENERIC

TRANSFER FUNCTION:

1mV/0.57

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Measure discharge pressure on second turbocharger on dual intake systems.

TRANSDUCER:

12258932-4

OFFSET REQUIRED:

YES

OFFSET LIMITS:

-7.5 to +7.5

TEST PROCEDURES:

1. Set TEST SELECT switch to 31.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

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TEST 32

DESCRIPTION:

This test displays a 2 digit number which corresponds to a differential voltage between pins y and z. The allowable input range is -90mV to 90mV.

APPLICABLE DCAS:

1-2, 6-7

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected

E005 Required offset test not performed.

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

DCA: 2,7 1mV/0.23
1,6 1mV/0.57

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Airbox Pressure (in. Hg.)

Measure the airbox pressure of two stroke engine. This measurement is used in detecting induction path obstructions of leaks.

TRANSDUCER:

12258932-3
12258932-4

OFFSET REQUIRED:

YES

OFFSET LIMITS:

DCA: 2,7 -3 to 3
1,6 -7.5 to 7.5

TEST PROCEDURES:

1. Set TEST SELECT switch to 32.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 33

DESCRIPTION:

This test displays a 2 digit number which corresponds to a differential voltage between pins w and x. The allowable input range is -54.72mV to 54.72mV.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected

E005 Required offset test not performed.

APPLICABLE DCAS:

10

CONTROL FUNCTIONS:

01,02,03,04,06
05 - DCA 10 Only

GENERIC

TRANSFER FUNCTION:
1mV/0.56

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:
Intake Manifold Vacuum
Used for spark ignition engine intake system evaluation (in. Hg)

TRANSDUCER:
12258932-1

OFFSET REQUIRED:
YES

OFFSET LIMITS:
-4.5 to 4.5

TEST PROCEDURES:

1. Set TEST SELECT switch to 33.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 34

DESCRIPTION:

This test displays a 2 digit number which corresponds to a differential voltage between pins w and x. The allowable input range is -54.72mV to 54.72mV

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

E005 Required offset test not performed.

APPLICABLE DCAS:

10

CONTROL FUNCTIONS:

01

GENERIC

TRANSFER FUNCTION:

1mV/0.56

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Intake Manifold Vacuum Variation (in. Hg).
Used for spark ignition engine intake system evaluation.

TRANSDUCER:

12258932-1

OFFSET REQUIRED:

YES

OFFSET LIMITS:

-4.5 to 4.5

TEST PROCEDURES:

1. Set TEST SELECT switch to 34.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 35

DESCRIPTION:

This test displays a 3 digit number which corresponds to a differential voltage between pins y and z. The allowable input range is -90mV to 90mV

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected

E005 Required offset test not performed.

APPLICABLE DCAS:

3-4,8-9

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

90mV/100

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Engine Oil Pressure. 100 psi

TRANSDUCER:

12258932-6

OFFSET REQUIRED:

YES

OFFSET LIMITS:

-15 to 15

TEST PROCEDURES:

1. Set TEST SELECT switch to 35.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 36

DESCRIPTION:

This test displays a 2 digit number which corresponds to a differential voltage between pins AC and AD. The allowable input range is -90mV to 90mV

APPLICABLE DCAS:

3-4,8-9

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

E005 Required offset test not performed.

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

90mV/25

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Typically used to measure the pressure drop across the engine oil filter as an indicator of filter element clogging..

TRANSDUCER:

12258934

OFFSET REQUIRED:

YES

OFFSET LIMITS:

-3.75 to 3.75

TEST PROCEDURES:

1. Set TEST SELECT switch to 36.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 37

DESCRIPTION:

This test displays a 3 digit number which corresponds to a differential voltage between pins k and m. The allowable input range is -100mV to 100mV

APPLICABLE DCAS:

1 - 9, 11 - 13

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

E005 Required offset test not performed.

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

100mV/300

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Engine Oil Temperature (°F).
Primarily applicable to air cooled engines.
Requires transducer output shorting switch on vehicle to perform system zero offset test.

TRANSDUCER:

12258933

OFFSET REQUIRED:

OPTIONAL

OFFSET LIMITS:

-45 to 45

TEST PROCEDURES:

1. Set TEST SELECT switch to 37.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 38

DESCRIPTION:

This test displays a 3 digit number which corresponds to a differential voltage between pins n and p. The allowable input range is -100mV to 100mV

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

E003 Required offset not performed

APPLICABLE DCAS:

1 - 13

CONTROL FUNCTIONS:

01,02,03,04,06
05 - DCA 10 ONLY

GENERIC

TRANSFER FUNCTION:

100mV/300

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Engine Coolant Temperature (°F)
Transducer output shorting switch on vehicle required.

TRANSDUCER:

12258933

OFFSET REQUIRED:

OPTIONAL

OFFSET LIMITS:

-45 to 45

TEST PROCEDURES:

1. Set TEST SELECT switch to 38.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 39

DESCRIPTION:

This test displays a 3 digit number which corresponds to a differential voltage between pins u and v. The allowable input range is -100mV to 100mV

APPLICABLE DCAS:

11 - 13

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

E005 Required offset test not performed.

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

100mV/300

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Transmission Pressure
Engine Coolant Temperature (°F)
Engine Oil Temperature (°F)
Transmission Temperature. (°F)

TRANSDUCER:

12258932-7
12258933

OFFSET REQUIRED:

YES

OFFSET LIMITS:

-45 to 45

TEST PROCEDURES:

1. Set TEST SELECT switch to 39.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 40

DESCRIPTION:

This test displays a 4 digit number which corresponds to a differential voltage between pins w and x. The allowable input range is -333mV to 333mV on DCAs 11 and 13 and -50mV to 50 mV on DCA 12.

POSSIBLE ERROR MESSAGE:

E003	Test number wrong for DCA connected.
E005	Required offset test not performed.

APPLICABLE DCAS:

11 - 13

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

DCA:

11,13	333mV/10,000
12	50mV/5.00

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Hydraulic Pressure

TRANSDUCER:

12258956 10,000 psi

OFFSET REQUIRED:

YES

OFFSET LIMITS:

DCA:

11,13	-1500	to	1500
12	-0.75		0.75

TEST PROCEDURES:

1. Set TEST SELECT switch to 40.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 41

DESCRIPTION:

This test displays a 4 digit number which corresponds to a differential voltage between pins y and z. The allowable input range is -333mV to 333mV on DCAs 11 and 13 and -90mV to 90 mV on DCA 12.

APPLICABLE DCAS:

11 - 13

POSSIBLE ERROR MESSAGE:

E003	Test number wrong for DCA connected.
E005	Required offset test not performed.

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

11, 13	333mV/10,000
12	90mV/100

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Hydraulic Pressure
Fuel Pressure

TRANSDUCER:

12258956
12258932-6

OFFSET REQUIRED:

YES

OFFSET LIMITS:

11,13	-1500	to	1500
12	-15		15

TEST PROCEDURES:

1. Set TEST SELECT switch to 41.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

121

TEST 42

DESCRIPTION:

This test displays a 3 digit number which corresponds to a differential voltage between pins AA and AB. The allowable input range is -90mV to 90mV on DCAs 12 and 13 and -100mV to 100 mV on DCA 11.

POSSIBLE ERROR MESSAGE:

E003	Test number wrong for DCA connected.
E005	Required offset test not performed.

APPLICABLE DCAS:

11 - 13

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

100mV/300
90mV/25
90mV/10

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Fuel Pressure

TRANSDUCER:

12258932-7
12258932-4
12258932-3

OFFSET REQUIRED:

YES

OFFSET LIMITS:

11	-45		45
12	-3.75	to	3.75
13	-1.5		1.5

TEST PROCEDURES:

1. Set TEST SELECT switch to 42.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 43

DESCRIPTION:

This test displays a 2 digit number which corresponds to a differential voltage between pins AC and AD. The allowable input range is -90mV to 90mV.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

E005 Required offset test not performed.

APPLICABLE DCAS:

13

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

90mV/25

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Airbox Pressure

TRANSDUCER:

12258932-4

OFFSET REQUIRED:

YES

OFFSET LIMITS:

-3.75 to 3.75

TEST PROCEDURES:

1. Set TEST SELECT switch to 43.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 44

DESCRIPTION:

This test displays a 3 digit number which corresponds to a differential voltage between pins X and Y. The allowable input range is -90mV to 90mV.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

E005 Required offset test not performed.

APPLICABLE DCAS:

13

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

90mV/100

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Fuel Pressure

TRANSDUCER:

12258932-7

OFFSET REQUIRED:

YES

OFFSET LIMITS:

-15 to 15

TEST PROCEDURES:

1. Set TEST SELECT switch to 44.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 68

DESCRIPTION:

This test displays a 3 digit number which corresponds to the voltage at pin T with repect to pin W. The allowable input range is -10 to 32 volts.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

APPLICABLE DCAS:

1 - 13

CONTROL FUNCTIONS:

01,02,03,04,06
05 - DCA 10 ONLY

GENERIC

TRANSFER FUNCTION:

1v/1.0

TYPICAL

TYPICAL APPLICATIONS:

Starter Motor Voltage

OFFSET REQUIRED:

NO

TEST PROCEDURES:

1. Set TEST SELECT switch to 68.
2. Turn on the circuit if voltage is not already present.
3. Press and release TEST button. If .9.9.9.9 is displayed, voltage is not within test range.
4. Observe displayed value.

TEST 69

DESCRIPTION:

This test displays a 3 digit number which corresponds to the voltage at pin M with repect to pin W. The allowable input range is -4 to 4 volts.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

APPLICABLE DCAS:

1 - 13

CONTROL FUNCTIONS:

01,02,03,04,06
05 - DCA 10 ONLY

GENERIC

TRANSFER FUNCTION:

1v/1.00v

TYPICAL

TYPICAL APPLICATIONS:

Measure the voltage drop on starter path. A high voltage (>2V) indcates excessive ground path resistance.

OFFSET REQUIRED:

NO

TEST PROCEDURES:

1. Set TEST SELECT switch to 69.
2. Turn on the circuit if voltage is not already present.
3. Press and release TEST button. If .9.9.9.9 is displayed, voltage is not within test range.
4. Observe displayed value.

TEST 70

DESCRIPTION:

This test displays a 3 digit number which corresponds to the voltage at pin S with repect to pin M. The allowable input range is -10 to 32 volts .

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

APPLICABLE DCAS:

1-13

CONTROL FUNCTIONS:

01,02,03,04,06
05 - DCA 10 ONLY

GENERIC

TRANSFER FUNCTION:

1v/1.0

TYPICAL

TYPICAL APPLICATIONS:

Starter Solenoid Voltage
Measure voltage present at the starter solenoid's positive terminal.

OFFSET REQUIRED:

NO

TEST PROCEDURES:

1. Set TEST SELECT switch to 70.
2. Turn on the circuit if voltage is not already present.
3. Press and release TEST button. If .9.9.9.9 is displayed, voltage is not within test range.
4. Observe displayed value.

TEST 71

DESCRIPTION:

This test displays a 4 digit number which corresponds to the voltage at pin X with repect to pin Y. The allowable input range is -100mV to 100mV .

POSSIBLE ERROR MESSAGE:

E003	Test number wrong for DCA connected.
E005	Required offset not performed

APPLICABLE DCAS:

1 - 10

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

DCA:

1-4,10	100mv/1000
5-9	100mV/2000

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset.

TYPICAL

TYPICAL APPLICATIONS:

Starter Current Average (amps)

TRANSDUCER

12258937-1
12258937-2

OFFSET REQUIRED:

YES

OFFSET LIMITS

DCA:				
	1-4,10	-150	to	150
	5-9	-300	to	300

TEST PROCEDURES:

1. Set TEST SELECT switch to 71.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 72

DESCRIPTION:

This procedure measures the overall condition of the complete starting system.

APPLICABLE DCAS:

	PINS:
1 - 4, 10	V-W,X-Y
5 - 9	V-W,X-Y

POSSIBLE ERROR MESSAGE:

E005	Offset not performed.
E008	VTM does not detect battery voltage.
E013	VTM cannot use data received.
E020	No first peak information was detected by the VTM.

CONTROL FUNCTIONS:

NONE

GENERIC

THERE IS NO GENERIC USE FOR THIS TEST, IT MAY BE USED ONLY FOR TESTING OF CURRENT FIRST PEAK.

REFERENCES:

TM 9-4910-571-12&P REV 1

TYPICAL

TYPICAL APPLICATIONS:

Check condition of starting system on CI or SI engines with VTM being powered from battery of vehicle tested.

TRANSDUCER:

12258937-1
12258937-2

OFFSET REQUIRED:

YES

OFFSET LIMITS

1-4,10	-150	to	150
5-9	-300	to	300

TEST PROCEDURES:

1. Set up engine to prevent starting. Locate and hold fuel shut-off closed.
2. Make sure all vehicle accessories are off.
3. Set TEST SELECT switch to 72.
4. Press and release TEST button until CAL appears on display.
5. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed. If not, go to Offset Troubleshooting Procedure.
6. Press and release TEST button.
7. When GO appears on display, engage starter for 2 seconds or until one of the following appears on the display.
   - OFF
   - .9.9.9.9
   - A number
   - An error message
8. Observe displayed value (amps).

NOTE:

If .9.9.9.9 is displayed, current first peak is more than 3000 amps and cannot be measured.

If E013 is displayed, then check battery connections and correct as necessary. Repeat step 7. If E013 persists after 3 tests, VTM cannot perform test.

TEST 73

DESCRIPTION:

This procedure measures the internal battery resistance.

APPLICABLE DCAS:

	PINS:
1 - 4, 10	V-W,X-Y
5 - 9	V-W,X-Y

POSSIBLE ERROR MESSAGE:

E005	Offset not performed.
E008	VTM does not detect battery voltage.
E013	VTM cannot use data received.
E020	No first peak information was detected by the VTM.

CONTROL FUNCTIONS:

NONE

GENERIC

THERE IS NO GENERIC USE FOR THIS TEST, IT MAY BE USED ONLY FOR TESTING OF BATTERY INTERNAL RESISTANCE.

REFERENCES:

TM 9-4910-571-12&P REV 1

TYPICAL

TYPICAL APPLICATIONS:

Evaluate batteries in CI or SI engines with VTM being powered from battery of vehicle being tested.

TRANSDUCER:

12258937-1
12258937-2

OFFSET REQUIRED:

YES

OFFSET LIMITS

1-4,10	-150	to	150
5-9	-300	to	300

TEST PROCEDURES:

1. Set up engine to prevent starting. Locate and hold fuel shut-off closed.
2. Make sure all vehicle accessories are off.
3. Set TEST SELECT switch to 73.
4. Press and release TEST button until CAL appears on display.
5. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed. If not, go to Offset Troubleshooting Procedure.
6. Press and release TEST button.
7. When GO appears on display, engage starter for 2 seconds or until one of the following appears on the display.
   - OFF
   - .9.9.9.9
   - A number
   - An error message
8. Observe displayed value (milliohms).

NOTE:

If .9.9.9.9 is displayed, battery internal resistance is beyond the range of the VTM and cannot be measured.

If E013 is displayed, then check battery connections and correct as necessary. Repeat step 7. If E013 persists after 3 tests, VTM cannot perform test.

136

TEST 74

DESCRIPTION:

This procedure measures the starter circuit resistance.

APPLICABLE DCAS: PINS:

1 - 4, 10	V-W,X-Y
5 - 9	V-W,X-Y

POSSIBLE ERROR MESSAGE:

E005	Offset not performed.
E008	VTM does not detect battery voltage.
E013	VTM cannot use data received.
E020	No first peak information was detected by the VTM.

CONTROL FUNCTIONS:

NONE

GENERIC

THERE IS NO GENERIC USE FOR THIS TEST, IT MAY BE USED ONLY FOR TESTING OF STARTER CIRCUIT RESISTANCE.

REFERENCES:

TM 9-4910-571-12&P REV 1

TYPICAL

TYPICAL APPLICATIONS:

Check resistance of complete starting system in CI or SI engines with VTM being powered from battery of vehicle being tested.

TRANSDUCER:

12258937-1
12258937-2

OFFSET REQUIRED:

YES

OFFSET LIMITS

1-4,10	-150	to	150
5-9	-300	to	300

TEST PROCEDURES:

1. Set up engine to prevent starting. Locate and hold fuel shut-off closed.
2. Make sure all vehicle accessories are off.
3. Set TEST SELECT switch to 74.
4. Press and release TEST button until CAL appears on display.
5. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed. If not, go to Offset Troubleshooting Procedure.
6. Press and release TEST button.
7. When GO appears on display, engage starter for 2 seconds or until one of the following appears on the display.
   - OFF
   - .9.9.9.9
   - A number
   - An error message
8. Observe displayed value (milliohms).

NOTE:

If .9.9.9.9 is displayed, starter circuit resistance is beyond the range of the VTM and cannot be measured.

If E013 is displayed, then check battery connections and correct as necessary. Repeat step 7. If E013 persists after 3 tests, VTM cannot perform test.

TEST 75

DESCRIPTION:

This procedure measures the rate of change of battery resistance.

APPLICABLE DCAS:

	PINS:
1 - 4, 10	V-W,X-Y
5 - 9	V-W,X-Y

POSSIBLE ERROR MESSAGE:

E005	Offset not performed.
E008	VTM does not detect battery voltage.
E013	VTM cannot use data received.
E020	No first peak information was detected by the VTM.

CONTROL FUNCTIONS:

NONE

GENERIC

THERE IS NO GENERIC USE FOR THIS TEST, IT MAY BE USED ONLY FOR TESTING OF THE RATE OF CHANGE OF BATTERY RESISTANCE.

REFERENCES:

TM 9-4910-571-12&P REV 1

TYPICAL

TYPICAL APPLICATIONS:

Evaluate batteries in CI or SI engines with VTM being powered from battery of vehicle being tested.

TRANSDUCER:

12258937-1
12258937-2

OFFSET REQUIRED:

YES

OFFSET LIMITS

1-4,10	-150	to	150
5-9	-300	to	300

TEST PROCEDURES:

1. Set up engine to prevent starting. Locate and hold fuel shut-off closed.
2. Make sure all vehicle accessories are off.
3. Set TEST SELECT switch to 75.
4. Press and release TEST button until CAL appears on display.
5. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed. If not, go to Offset Troubleshooting Procedure.
6. Press and release TEST button.
7. When GO appears on display, engage starter for 2 seconds or until one of the following appears on the display.
   - OFF
   - .9.9.9.9
   - A number
   - An error message
8. Observe displayed value (milliohms/second).

NOTE:

If .9.9.9.9 is displayed, the battery resistance change rate is beyond the range of the VTM and cannot be measured.

If E013 is displayed, then check battery connections and correct as necessary. Repeat step 7. If E013 persists after 3 tests, VTM cannot perform test.

TEST 80

DESCRIPTION:

This test displays a 4 digit number which corresponds to a differential voltage between pins X and Y. The allowable input range is -100mV to 100mv.

APPLICABLE DCAS:

1 - 10

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

E005 Offset test not performed

CONTROL FUNCTIONS:

01,02,03,04,06
05 - DCA 10 ONLY

GENERIC

TRANSFER FUNCTION:

DCA:
1-4,10 100mV/1000
5-9 100mV/2000

VTM offset (excluding transducer) ±1

Offset of transducer is expressed in displayed units and is to be added to the VTM offset

TYPICAL

TYPICAL APPLICATIONS:

Measure current to or from the battery

TRANSDUCER

12258937-1
12258937-2

OFFSET REQUIRED:

YES

OFFSET LIMITS

DCA:
1-4,10 -150 to 150
5-9 -300 300

TEST PROCEDURES:

1. Set TEST SELECT switch to 80.
2. Make sure no stimulus is applied to transducer.
3. Press and release TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset value is within proper limits proceeed.
5. Press and release TEST button.
6. Apply stimulus to transducer.
7. Observe displayed value.

TEST 81

DESCRIPTION:

This test displays PASS/FAIL which corresponds to a differential voltage between pins Z,a,b and F. The allowable input range is -10 to 32 volts.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

APPLICABLE DCAS:

1-13

CONTROL FUNCTIONS:

05 - DCA 10 ONLY

GENERIC

TRANSFER FUNCTION:

FAIL < 1.76 volts

TYPICAL

TYPICAL APPLICATION:

Battery electrolyte level

TRANSDUCER

12258935

OFFSET REQUIRED:

NO

TEST PROCEDURES:

1. Set TEST SELECT switch to 81.
2. Turn on the circuit if voltage is not already present.
3. Press and release TEST button. If .9.9.9.9 is displayed, voltage is not within test range.
4. Observe displayed value.

TEST 82

DESCRIPTION:

This test displays a 3 digit number which corresponds to the voltage at pins N with respect to pin W. The allowable input range is -10 to 32 volts.

APPLICABLE DCAS:

1 - 13

POSSIBLE ERROR MESSAGE:

E003	Test number wrong for DCA connected.

CONTROL FUNCTIONS:

01,02,03,04,06
05 - DCA 10 ONLY

GENERIC

TRANSFER FUNCTION:

1v/1.0

TYPICAL

TYPICAL APPLICATIONS:
ALT/GEN Output Voltage

OFFSET REQUIRED:

NO

TEST PROCEDURES:

1. Set TEST SELECT switch to 82.
2. Turn on the circuit if voltage is not already present.
3. Press and release TEST button. If .9.9.9.9 is displayed, voltage is not within test range.
4. Observe displayed value.

TEST 83

DESCRIPTION:

This test displays a 3 digit number which corresponds to the voltage at pins O with respect to pin M. The allowable input range is -10 to 32 volts.

APPLICABLE DCAS:

1 - 13

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

CONTROL FUNCTIONS:

01,02,03,04,06
05 - DCA 10 ONLY

GENERIC

TRANSFER FUNCTION:

1v/1.0

TYPICAL

TYPICAL APPLICATIONS:

Measure Voltage Present at ALT/GEN Field Windings

OFFSET REQUIRED:

NO

TEST PROCEDURES:

1. Set TEST SELECT switch to 83.
2. Turn on the circuit if voltage is not already present.
3. Press and release TEST button. If .9.9.9.9 is displayed, voltage is not within test range.
4. Observe displayed value.

147

TEST 84

DESCRIPTION:

This test displays a 2 digit number which corresponds to the voltage at pins W with respect to pin P. The allowable input range is -4 to 4 volts.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

APPLICABLE DCAS:

1 - 10

CONTROL FUNCTIONS:

01,02,03,04,06
05 - DCA 10 ONLY

GENERIC

TRANSFER FUNCTION:

1v/1.0

TYPICAL

TYPICAL APPLICATIONS:

Measures voltage drop in ground cable connection between ALT/GEN ground terminal and the battery negative terminal.

OFFSET REQUIRED:

NO

TEST PROCEDURES:

1. Set TEST SELECT switch to 84.
2. Turn on the circuit if voltage is not already present.
3. Press and release TEST button. If .9.9.9.9 is displayed, voltage is not within test range.
4. Observe displayed value.

143

TEST 85

DESCRIPTION:

This test displays a 2 digit number which corresponds to the voltage at pins n with respect to pin p. The allowable input range is 0 to 3 volts AC RMS.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

APPLICABLE DCAS:

5

CONTROL FUNCTIONS:

01,02,03,06

GENERIC

TRANSFER FUNCTION:

1v/1.0

TYPICAL

TYPICAL APPLICATIONS:

Measures voltage output at the current transformer in 50 ampere alternator.

OFFSET REQUIRED:

NO

TEST PROCEDURES:

1. Set TEST SELECT switch to 85.
2. Turn on the circuit if voltage is not already present.
3. Press and release TEST button. If .9.9.9.9 is displayed, voltage is not within test range.
4. Observe displayed value.

TEST 86

DESCRIPTION:

This test displays a 3 digit number which corresponds to the voltage at pins L with respect to pin W. The allowable input range is 0 to 22 volts AC RMS.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

APPLICABLE DCAS:

5

CONTROL FUNCTIONS:

01,02,03,06

GENERIC

TRANSFER FUNCTION:

1v/1.0

TYPICAL

TYPICAL APPLICATIONS:

Measures alternator output voltage.

OFFSET REQUIRED:

NO

TEST PROCEDURES:

1. Set TEST SELECT switch to 86.
2. Turn on the circuit if voltage is not already present.
3. Press and release TEST button. If .9.9.9.9 is displayed, voltage is not within test range.
4. Observe displayed value.

145

TEST 98

DESCRIPTION:

This test displays a 3 digit number which corresponds to the voltage at pins L with respect to pin W. The allowable input range is -10 to 32 volts.

APPLICABLE DCAS:

1-4,6-9,11-13

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

CONTROL FUNCTIONS:

01,02,03,04,06

GENERIC

TRANSFER FUNCTION:

1v/1.0

TYPICAL

TYPICAL APPLICATIONS:

Battery Voltage
Starter Solenoid Voltage
Fuel Solenoid Voltage
ALT/GEN Output Voltage
Coil Primary Voltage

OFFSET REQUIRED:

NO

TEST PROCEDURES:

1. Set TEST SELECT switch to 98.
2. Turn on the circuit if voltage is not already present.
3. Press and release TEST button. If .9.9.9.9 is displayed, voltage is not within test range.
4. Observe displayed value.

146

TEST 87

DESCRIPTION:

This test displays a 4 digit number which corresponds to the frequency at pins L with respect to pin W. The allowable input range is 12 to 3200 Hz @1 to 22 VAC.

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

APPLICABLE DCAS:

1-4,6-9,11-13

CONTROL FUNCTIONS:

NONE

GENERIC	TYPICAL
TRANSFER FUNCTION: 1Hz/1	**TYPICAL APPLICATIONS:** Generator Frequency **OFFSET REQUIRED:** NO

TEST PROCEDURES:

1. Set TEST SELECT switch to 87.
2. Turn on the circuit if voltage is not already present.
3. Press and release TEST button. If .9.9.9.9 is displayed, voltage is not within test range.
4. Observe displayed value.

147

TEST 99

DESCRIPTION:

This test displays a 3 digit number which corresponds to the AC voltage at pins L with respect to pin W. The allowable input range is 0 to 22 VAC RMS @ 10 - 1000 Hz..

POSSIBLE ERROR MESSAGE:

E003 Test number wrong for DCA connected.

APPLICABLE DCAS:

1-4,6-9,11-13

CONTROL FUNCTIONS:

01,02,03,06

GENERIC

TRANSFER FUNCTION:

1v/1.0

TYPICAL

TYPICAL APPLICATIONS:

Alternator AC Output

OFFSET REQUIRED:

NO

TEST PROCEDURES:

1. Set TEST SELECT switch to 99.
2. Turn on the circuit if voltage is not already present.
3. Press and release TEST button. If .9.9.9.9 is displayed, voltage is not within test range.
4. Observe displayed value.

Example of Test 24 (HMMWV)

FUEL SUPPLY PRESSURE (psi) TEST #24

Description:

This procedure measures the return pressure, in order to detect line blockage, leaks or insuffcient restrictor back pressure.

Pre-Test Procedures

Run Confidence Test

Typical Applications:

Fuel Supply Pressure

Control Functions:

01,02,03,04,06

Possible Error Messages

E005 Offset not performed.

Test Procedure:

1. Turn off vehicle.
2. Set TEST SELECT switch to 24.
3. Press and hold TEST button until CAL appears on display.
4. Release TEST button and wait for offset value to appear on display. If offset is within -15 to 15 proceed. If not, go to DCA Troubleshooting Procedure
5. Press and release TEST button.
6. Start engine
7. Observe displayed value.

Example of Test 68 (HMMWV)

STARTER MOTOR VOLTAGE TEST #68

Description:

This procedure measures the voltage present at the starter motor positive terminal, in the range 0 - 32 volts.

Pre-Test Procedures:

Run Confidence Test

Typical Applications:

Check Starter Motor Voltage

Control Functions:

01,02,03,04,06

Possible Error Message

Test Procedure:

1. Disconnect Fuel Solenoid wire 54A to prevent starting.
2. Set TEST SELECT switch to 68.
3. Press and release TEST button.
4. Crank the engine and observe the displayed voltage.